

JS 10/21/21
 RJA 01/06/22

Fate Report for Case # P-18-0068

Fate

Summary Statement

Fate P-18-0068

Summary

Statement: FATE: MW = [REDACTED] with [REDACTED] < 500 and [REDACTED] < 1000

[REDACTED]
 S =

Negligible / Reacts slowly

Hydrolysis half-life = wk

VP <

1.0E-6 torr at 25 °C (E)

BP > 400 °C (E)

H < 1.00E-8 (E)

POTW removal (%) = PMN 90 via sorption and slow hydrolysis; then Hyd

Pdt [REDACTED] 90

via

sorption and biodeg; Hyd Pdt [REDACTED] deg 90 via sorption

Time for

complete ultimate aerobic biodeg = Hyd Pdt [REDACTED] wk; Hyd Pdt [REDACTED]
 deg > mo

Sorption to soils/sediments = PMN strong; Hyd Pdt [REDACTED]

[REDACTED] strong; Hyd Pdt [REDACTED] deg

strong

PBT Potential: PMN P1B1; Hyd Pdt [REDACTED] P2B1; Hyd

Pdt [REDACTED] deg P3B* (low)

*CEB FATE: Migration to ground water = PMN

slow; Hyd Pdt [REDACTED] slow; Hyd Pd

[REDACTED] deg slow

Bioconcentration

factor to be put into E-FAST: Hyd Pdt [REDACTED] = 100.

PMN

Material:

Overall wastewater treatment removal is 90% via sorption and
 slow hydrolysis.

Sorption to sludge is strong based on high
 molecular volume.

Air Stripping (Volatilization to air) is
 negligible based on high molecular volume.

Removal by biodegradation

in wastewater treatment is negligible based on high molecular volume.

PMN Material:

Low Persistence (P1) is based on slow hydrolysis (hydrolysis half-life: days to weeks).

Low Bioaccumulation potential

(B1) is based on slow hydrolysis (hydrolysis half-life: days to weeks).

Hydrolysis Product ([REDACTED])

Overall wastewater treatment removal is 90% via sorption and biodegradation.

Sorption to sludge

is strong based on the estimated physical-chemical properties from EPISUITE.

Air Stripping (Volatilization to air) is negligible based on the estimated physical-chemical properties from EPISUITE.

Removal by

biodegradation in wastewater treatment is high based on structure (fatty acids).

The aerobic aquatic biodegradation half-life is weeks based on structure [REDACTED].

The anaerobic aquatic

biodegradation half-life is months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong

based on the estimated physical-chemical properties from EPISUITE.

Migration to groundwater is slow based on the estimated physical-chemical properties from EPISUITE.

Hydrolysis Product

([REDACTED])

Moderate Persistence (P2) is based on the anaerobic biodegradation half-life.

Low Bioaccumulation potential (B1) is based on BCFBAF model estimates.

Hydrolysis Product ([REDACTED])

[REDACTED]:

Overall wastewater treatment removal is 90% via sorption.

Sorption to sludge is strong based on structure (inorganic metal oxide) and analogous chemicals.

Air Stripping (Volatilization to

air) is negligible based on structure (inorganic metal oxide) and analogous chemicals.

Removal by biodegradation in wastewater treatment is negligible based on structure (inorganic metal oxide) and analogous chemicals.
 The aerobic aquatic biodegradation half-life is greater than months based on structure (inorganic metal oxide) and analogous chemicals.
 The anaerobic aquatic biodegradation half-life is greater than months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on structure (inorganic metal oxide) and analogous chemicals.

Migration to groundwater is slow based on structure (inorganic metal oxide) and analogous chemicals.

Hydrolysis Product ()::

High

Persistence (P3) is based on the anaerobic biodegradation half-life and analogous chemicals.

Bioaccumulation potential (B*-low) is based on analogous chemicals.

Bioconcentration/Bioaccumulation factor to be put into E-Fast: 100

CBI:

Fate Card, Marcella

Assessor:

SMILES:

Physical Properties

Property	Measured/Calculated Value	EPI
Molecular Form:		
Molecular Wt.:		
% < 500:		
% < 1000:		

Property	Measured Value	Method	Estimated Value	Method	EPI
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Property	Measured Value	Method	Estimated Value	Method	EPI
Melting Point:					
Boiling Point:					
BP Pressure:			@760		@760
Vapor Pressure:			<0.000001	Metallic	
Water Solubility:			<0.000001/Reacts	Structure	
Log P:					
Log Kow:					
Log Koc:					
Log BCF:					
Henry's Law:					

pH:
pH
Comment:

Fate Analysis

Hydrolysis (t1/2, da):	Volatilization (t1/2) - River (hr):	Volatilization (t1/2) - Lake (da):
Atm Ox Potential (t1/2)OH (hr):	Atm Ox Potential (t1/2)O3 (hr):	Atm Ox Potential (t1/2) Total (hr):
MITI Linear:	MITI NonLinear:	
Biodeg Linear:	Biodeg NonLinear:	
Biodeg Survey ult:	Biodeg Survey Prim:	
STP (% removal) Total:	STP (% removal) Biodeg:	
STP (% removal) Ads:	STP (% removal) Air:	

Rationales

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**Removal in
Wastewater
Treatment:
Atmospheric
Oxidation:
Hydrolysis:
Photolysis:
Aerobic
Biodegradation:
Anaerobic
Biodegradation:
Sorption
to Soil and
Sediment:
Migration to
Groundwater:
Persistence - Air:
Persistence
- Water:
Volatilization
from Water:
Soil:
Sediment:
Other:
Standard:
Bioaccumulation:**

PBT Ratings

Persistence	Bioaccumulation	Toxicity	PBT Comments
1	1	1	PMN
2	1	1	Hyd Pdt [REDACTED]
3	*	1	Hyd Pdt [REDACTED] deg

Exposure-Based Testing

Exposure-Based Testing:

Fate Ratings

**Removal in WWT/POTW
(Overall):**

90;90;90

**Removal in
WWT/POTW
(Overall):**

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
WWT/POTW Sorption:	3;3;3	Low	Moderate	Strong	V. Strong	
WWT/POTW Stripping:	4;4;4	Extensive	Moderate	Low	Negligible	
Biodegradation Removal:	4;2;4	Unknown	High	Moderate	Negligible	
Biodegradation Destruction:		Unknown	Complete	Partial	—	
Aerobic Biodeg Ult:	;2;4	<= Days	Weeks	Months	> Months	
Aerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Anaerobic Biodeg Ult:	;3;4	<= Days	Weeks	Months	> Months	
Anaerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Hydrolysis (t1/2 at pH 7,25C) A:	4	<= Minutes	Hours	Days	>= Months	
Hydrolysis (t1/2 at pH 7,25C) B:		<= Minutes	Hours	Days	>= Months	
Sorption to Soils/Sediments:	2;2;2	V. Strong	Strong	Moderate	Low	
Migration to Ground Water:	2;2;2	Negligible	Slow	Moderate	Rapid	PMN slow; Hyd Pdt slow; Hyd Pd deg slow
Photolysis A, Direct:		Negligible	Slow	Moderate	Rapid	
Photolysis B, Indirect:		Negligible	Slow	Moderate	Rapid	
Atmospheric Ox A, OH:		Negligible	Slow	Moderate	Rapid	

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
Atmospheric Ox B, O3:		Negligible	Slow	Moderate	Rapid	

Bio**Comments:**

<p>Bio PMN; Hyd Pdt [REDACTED]</p> <p>Comments: Hyd Pdt [REDACTED] deg. The PMN material may react with water (weeks) to produce [REDACTED] and leaving hydroxyl groups in the polymer. Hydrolysis will be inhibited due to low water solubility but acidic conditions may increase the rate of hydrolysis.</p>

Fate Comments:

<p>Fate Comments: PMN</p> <p>Material:</p> <p>Overall wastewater treatment removal is 90% via sorption and slow hydrolysis.</p> <p>Sorption to sludge is strong based on high molecular volume.</p> <p>Air Stripping (Volatilization to air) is negligible based on high molecular volume.</p> <p>Removal by biodegradation in wastewater treatment is negligible based on high molecular volume.</p> <p>PMN Material:</p> <p>Low Persistence (P1) is based on slow hydrolysis (hydrolysis half-life: days to weeks).</p> <p>Low Bioaccumulation potential (B1) is based on slow hydrolysis (hydrolysis half-life: days to weeks).</p> <p>Hydrolysis Product ([REDACTED])</p> <p>Overall wastewater treatment removal is 90% via sorption and biodegradation.</p> <p>Sorption to sludge is strong based on the estimated physical-chemical properties from EPISUITE.</p> <p>Air Stripping (Volatilization to air) is negligible based on the estimated physical-chemical properties from EPISUITE.</p> <p>Removal by biodegradation in wastewater treatment is high based on structure [REDACTED].</p> <p>The aerobic aquatic biodegradation half-life is weeks based on structure ([REDACTED]).</p> <p>The anaerobic aquatic</p>
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biodegradation half-life is months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on the estimated physical-chemical properties from EPISUITE.

Migration to groundwater is slow based on the estimated physical-chemical properties from EPISUITE.

Hydrolysis Product

()

Moderate Persistence (P2) is based on the anaerobic biodegradation half-life.

Low Bioaccumulation potential (B1) is based on BCFBAF model estimates.

Hydrolysis Product ()

Oxide):

Overall wastewater treatment removal is 90% via sorption.

Sorption to sludge is strong based on structure (inorganic metal oxide) and analogous chemicals.

Air Stripping (Volatilization to air) is negligible based on structure (inorganic metal oxide) and analogous chemicals.

Removal by biodegradation in wastewater treatment is negligible based on structure (inorganic metal oxide) and analogous chemicals.

The aerobic aquatic biodegradation half-life is greater than months based on structure (inorganic metal oxide) and analogous chemicals.

The anaerobic aquatic biodegradation half-life is greater than months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on structure (inorganic metal oxide) and analogous chemicals.

Migration to groundwater is slow based on structure (inorganic metal oxide) and analogous chemicals.

Hydrolysis Product ():

High

Persistence (P3) is based on the anaerobic biodegradation half-life and analogous chemicals.

Bioaccumulation potential (B*-low) is based on analogous chemicals.

Bioconcentration/Bioaccumulation factor to be
put into E-Fast: [REDACTED] 100

Comments/Telephone Log

Artifact	Update/Upload Time
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